

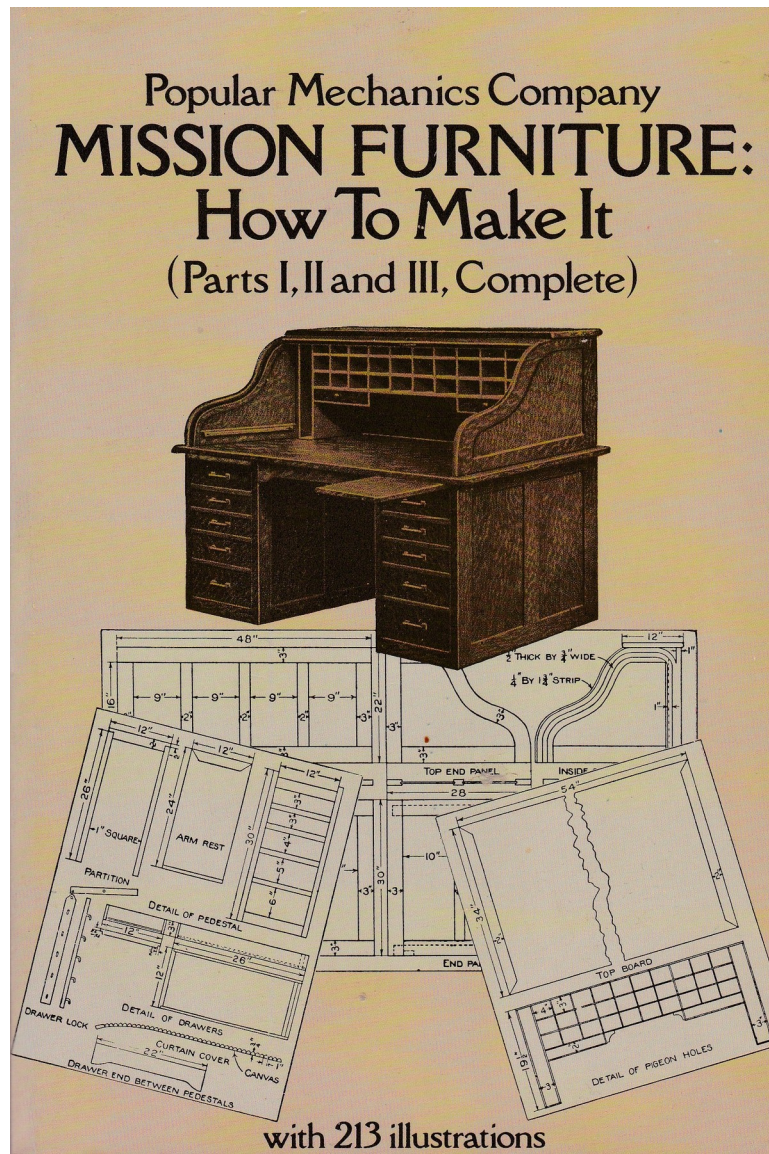
Building Two Fern Stands in 2014 in Fairbury, Illinois

By: Dale C. Maley
Fairbury, Illinois
December 19, 2023

Fern Stand - Mission Style from 1909

I have a book which has reprints of 1909, 1910, and 1912 issues of Popular Mechanics magazine. This book has many Mission Style furniture patterns. I liked the looks of the Fern Table design and decided to make a pair. I made this pair back in 2014.

Here is a copy of the cover of the 1980 book.



Here is the original pattern from the book....

FERN STAND

241

A FERN STAND

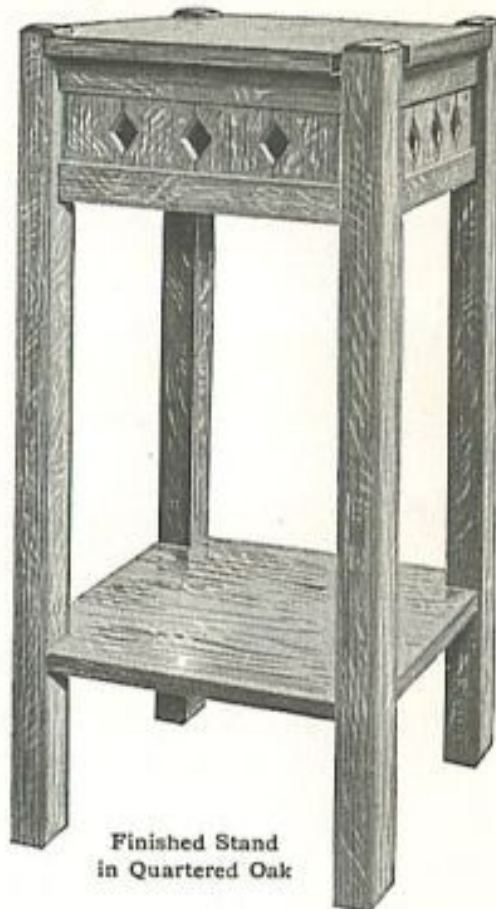
When making the fern stand shown in the accompanying sketch use quarter-sawed oak if possible, as this wood is the most suitable for finishing in the different mission stains. Considerable labor can be saved in its construction by ordering the stock from the mill ready cut to length, squared and sanded. Order the following pieces:

4 posts, $1\frac{1}{2}$ by $1\frac{1}{2}$ by 30 in., S-4-S.
8 side rails, $\frac{3}{4}$ by $1\frac{1}{2}$ by $13\frac{1}{2}$ in., S-4-S.
2 shelf supports, $\frac{3}{4}$ by 1 by $13\frac{1}{2}$ in., S-4-S.
1 top, $\frac{3}{4}$ by 16 by 16 in., S-4-S.
1 shelf, $\frac{3}{4}$ by 15 by 15 in., S-4-S.
16 slats, $\frac{3}{8}$ by 3 by 5 in., S-4-S.

The legs are made first. Be sure they are square and of equal length. The mortises can be laid out and cut or they can be left until the tenons on the side rails are all made, then marked and cut from

each tenon. The top rails and the slats are exactly

fit together square and tight. The posts and rails should be glued and assembled, then the top and bottom boards put in place to hold the frame square when the clamps are put on.

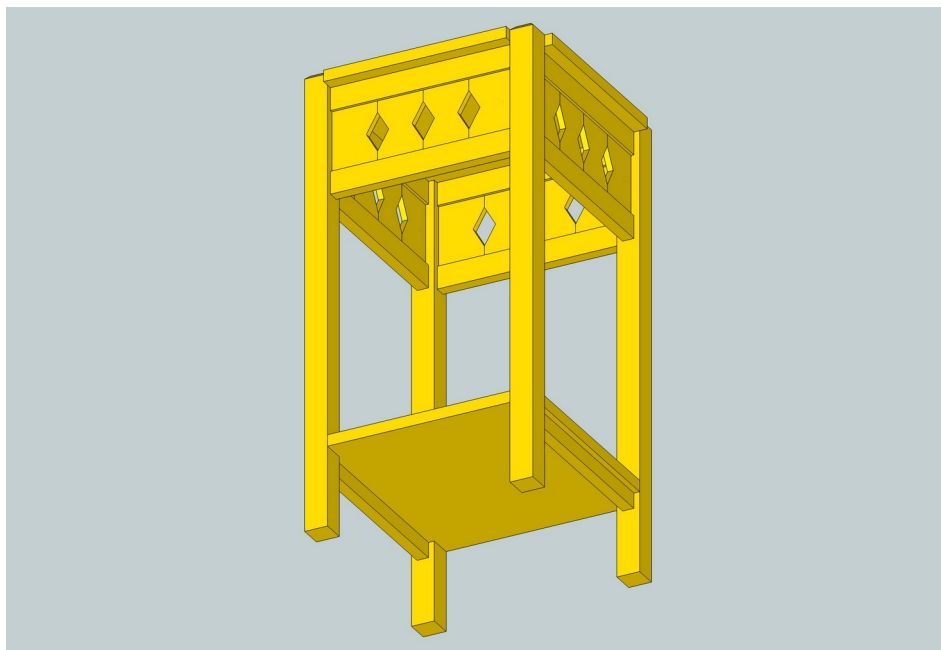


Finished Stand
in Quartered Oak

Leave to dry for about 24 hours before removing the clamps. Fasten the top and bottom boards in place and then go over the stand with fine sandpaper and remove all surplus glue and rough spots.

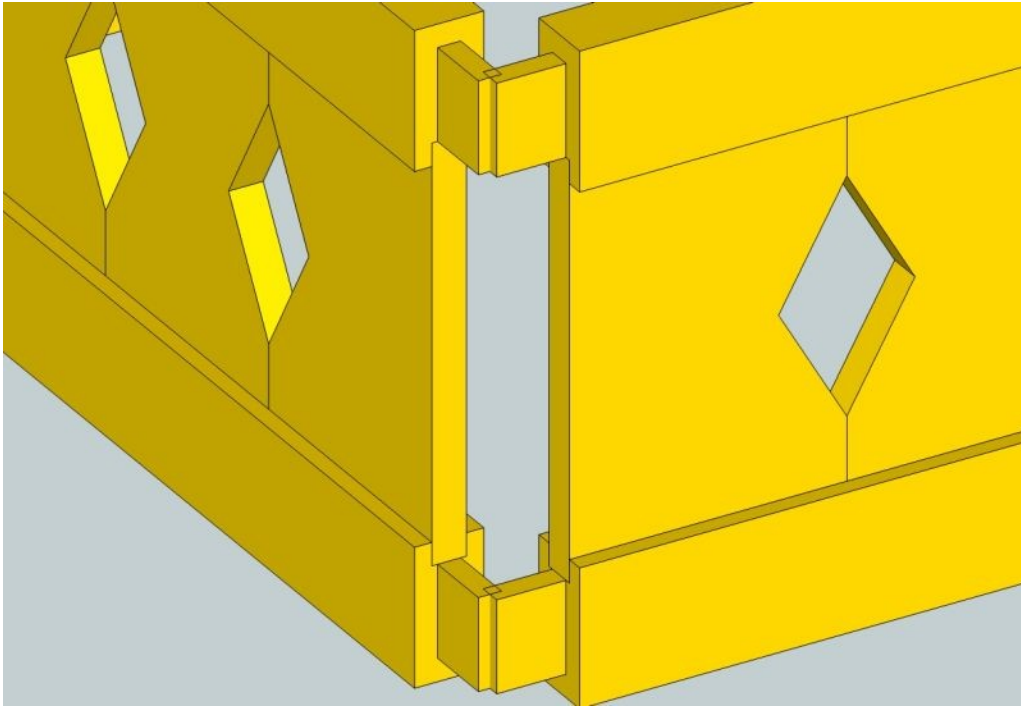
Sketchup

I converted the design into a Google Sketchup design.....



Tenons

The material list calls for the tenons to be 3/4" long for the 8 horizontal rails. If you make them 3/4" long, they will hit each other in the corners.



I will probably just make them 5/8" long versus 3/4" so they do not hit each other. The pattern also does not call out whether to use 1/4" or 3/8" wide tenons. I am going to choose 1/4" wide. Otherwise, my Sketchup design is identical to the 1909 plans.

Wood Selection

The plans call for quarter-sawn white oak, which is tough for me to get. I'm going to make mine from red oak. Menard's has 1.5x1.5x72 inch red oak, which you need to make 4 square legs.

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Jig for Sawing Legs to 30 Inch Length

I made a temporary jig to try to saw each of the legs to the same length.....



Ripping Legs

It is about my old 1967 sears table saw can do to rip 1.5" thick red oak. I assumed I would get burn marks from ripping the oak. So, I ripped the 3.5" wide boards into 2 equal halves, then I ran them through my planer to remove the table saw burn marks.



After planing, the legs were exactly 1.5 inch square, as called for in the design, with no burn marks :)

Drill Press Mortise Attachment

I blew the dust off my old AMT mortise attachment and installed it on the drill press. It takes quite a bit of time to get the fence set correctly, so the square chisel exactly is in the center of the board. But once you get it set up, you can pound out the mortises pretty quickly. I used 1/4" mortises for this project.

NOTE: After I did this project, I bought a used Delta mortising machine and I know longer have to use the drill press set-up.





I labeled each leg with masking tape, because it is easy to get the mortise on the wrong side of the leg if you are not paying attention. Old brown masking tape worked better than blue, it was easier to see the black marker on the light brown tape.



Making the Tenons

I first set up the router table with a 1/4" bit, but I got way too much tear-out. I got out the table saw tenon attachment and set it up. It also takes a long time to set up and get the tenon thickness just right. But once it is set up, you can crank out tenons. I first sawed the inner cuts on both sides of the tenon. Then it took 2 more rounds for each piece, to saw out the remaining stock.

I could have set up a dado blade so I cut each side in 1 pass.....but I was worried I would get more tear-out with the wider dado blades.



I used
the table
saw to
remove
the cheek
portion
of the
tenon.
Be sure

and get the fence set correctly before you start sawing.



Rough Fit-Up of the Base Table

Here I am checking the basic fit-up of one table.....



Looking good so far 😊 .

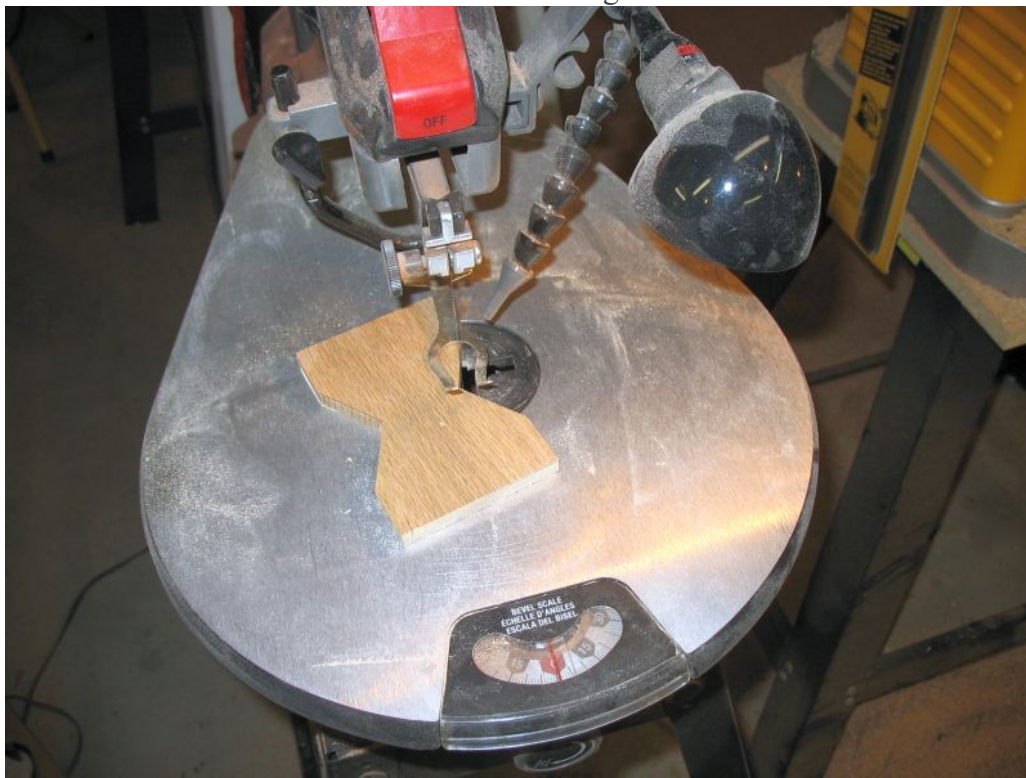
Router Table for Grooves in Horizontal Stiles

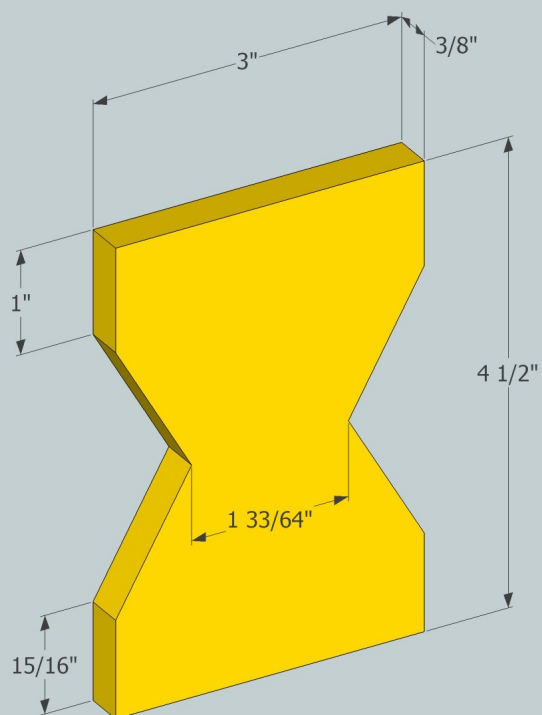
I used a 3/8" straight bit and went about 7/16" deep. I temporarily clamped a guide board to keep the pieces from slipping away from the fence. I did it in 2 depth passes.



Diamond Panels

I planed 3/4" red oak down to 3/8" thickness. I used the scroll saw to cut out the diamond shapes. I put in a coarser blade to saw the 3/8" thick oak without burning it.





Assembly of the Diamond Panels

My panel width is about 1/8" less than the plans. I trimmed equal amounts from the 2 end pieces so they all fit ok with a little clearance.



Table Frame with Diamond Panels

**Lots of
Saw
Dust**

Planing
the 3/8"
thick
panels
from
3/4"
stock
created
a lot of
red oak



sawdust!

Kreg Fixture

I used the Kreg fixture to make the 2 shelves and 2 tops.....



Belt Sanding Shelves and Tops

I like the pencil method of marking the low side of the joint where 2 boards are glued together....then you belt sand until the pencil marks are gone. Without the pencil marks, it is easy to miss a spot where the joint is not flat. Cleaning the belt with the gum stick often helps to speed up the sanding process.



45 Degree Leg Tops

I used the miter saw to make these. It worked well and had no burn marks either.

NOTE: On future projects making more of these tables, don't saw 45 degrees on the leg tops until after you mark the cut-outs needed on the top. See note later on.



Cutting the Corners

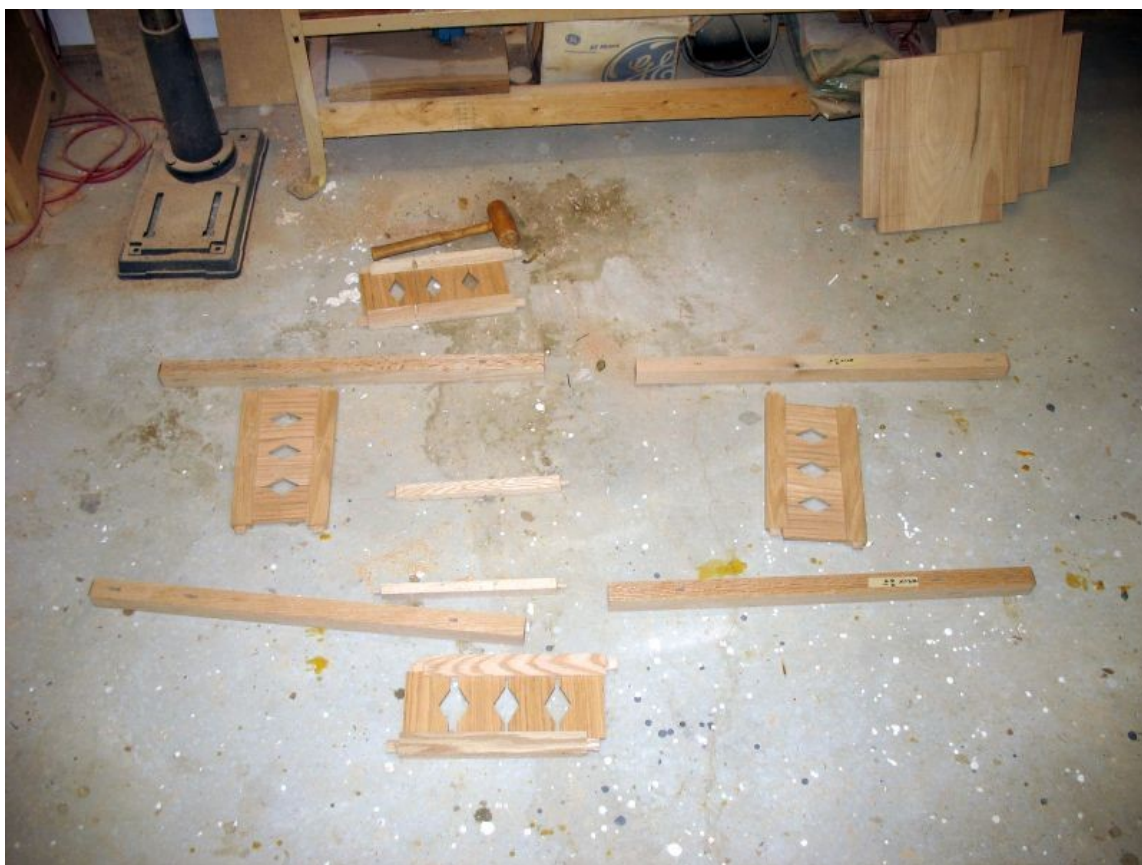
I used the scroll saw with a pin end coarse blade to cut out the square corners. It is time consuming to lay these out to get a very good fit to the legs.



Lots
of

Pieces on This Project

I dis-assembled the tables on the floor, to keep the pieces matched up.....so I could table saw the grooves required for the steel clamps.



All Pieces Cut on 1st Table



Better Method of Marking the 4 corners to saw

On the 2nd table, I just set the table on the shelf, then marked the cut-out areas around the legs as shown in the picture below.....



Stain

I chose Spanish oak stain for these two fern tables.....



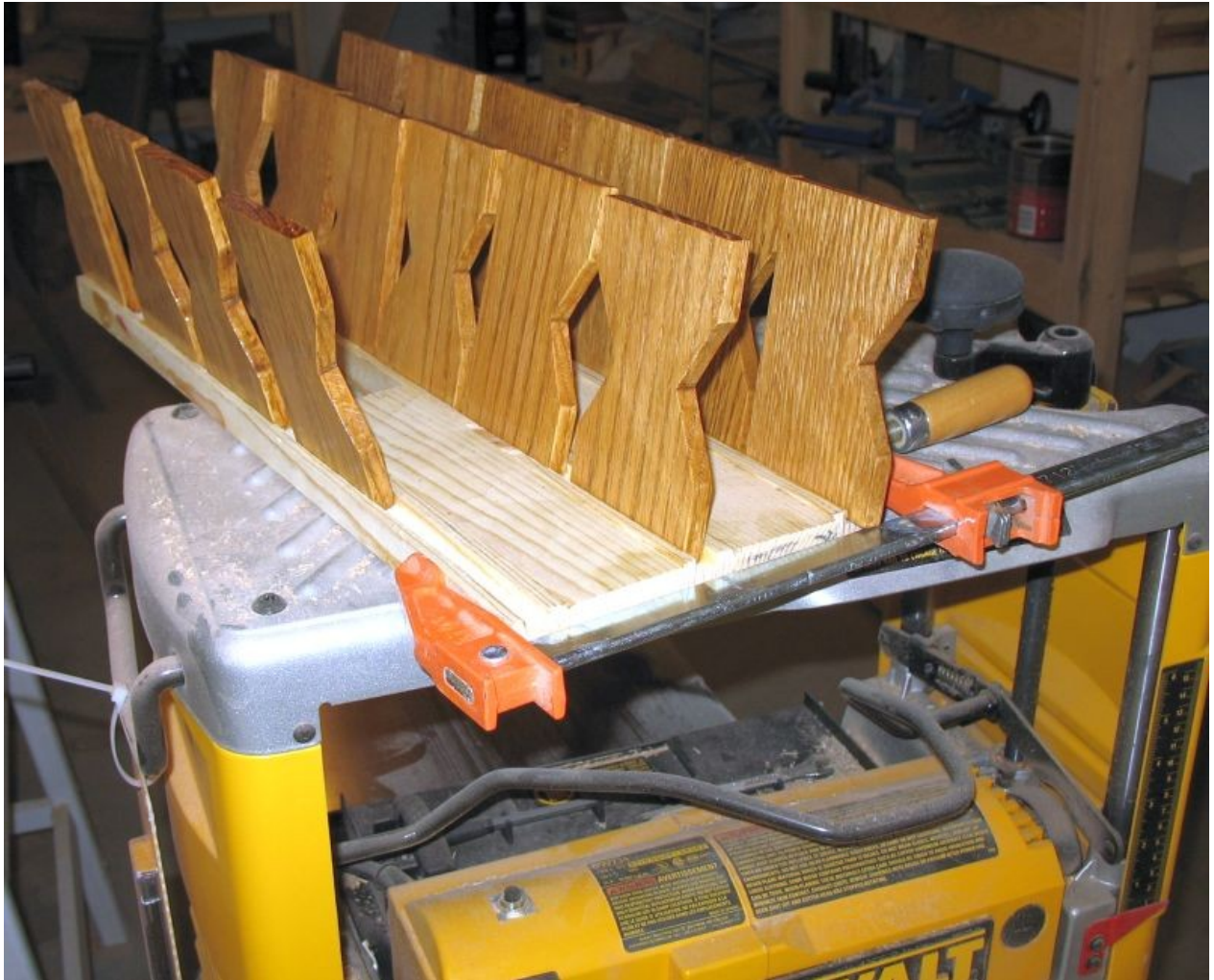
I stained all the pieces and finished them before I did the final glue-up and assembly.



Special Jigs for Holding stained & varnished pieces

I ended up making 2 temporary jigs to hold the fern table pieces after staining and after varnishing.

I routed a 3/8" wide groove about 1/4" deep on 3 scrap pieces, then clamped them together so they would not fall over. Since they assemble into the fern table stiles that are more than 3/8" deep, any little mark from these temporary jigs will not show on the tables.....



I wanted to be able to stain and varnish these pieces on my work table, then set them aside away from the dust while they dry.

I used 1/4" short dowel pieces to hang the legs during staining and varnishing...



Behlen Grain Filler

I used Behlen's grain filler on the 4 legs, the shelf, and the top. The steps I used were:

1. Mark all pieces for easy final assembly. Used steel stamp set to mark (A, B, C, D).
2. sand to 220 grit
3. Stain
4. Stir up Behlen's grain filler in the can using paint stirrer and slowest speed on drill press
5. Apply Behlen's using finger. Let dry for 10 minutes, then scrape across the grain with Behlen's plastic knife. Wipe across the grain with burlap from McMaster-Carr.
6. After grain filler dries, sand to 220 grit.
7. Re-stain the pieces
8. Three or 4 rounds of 220 grit sanding and polyurethane



Final Assembly of Gluing and Clamping

I assembled using the stamped ID's on the pieces. Then I glued and clamped up everything. Last I installed the Rockwell steel brackets to hold the top and shelf (which allow the top and shelf to expand and contract separately from the rest of the table frame).

TABLE TOP FASTENERS

34215

APPLICATION:

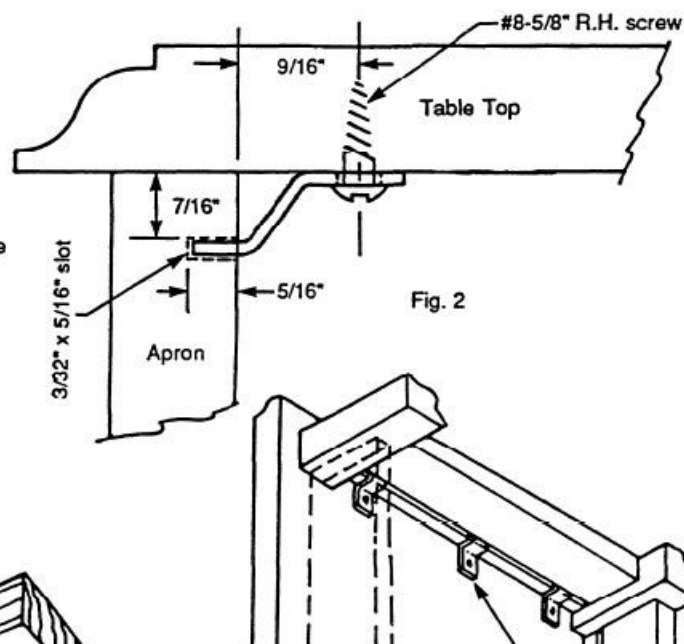
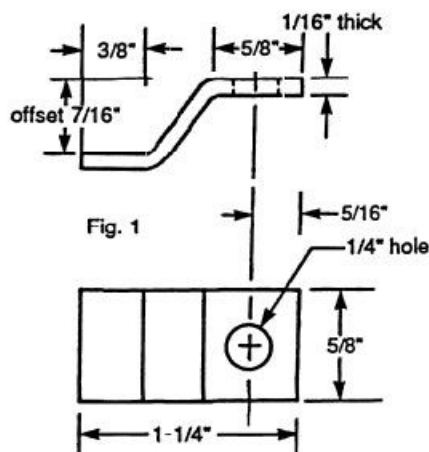
A fastener that is designed primarily to easily fasten a table top to an apron and still allow for expansion.

FEATURES:

- Ideal for fastening the table top to a table apron
- Made of extra heavy #A gauge cold rolled steel with a bright steel finish
- Screws are included
- Easily installed
- Available in 5/8" width x 1-1/4" length
- Fasteners are screwed to underside of table and hook in a 3/32" slot on the apron
- Allows for expansion and contraction of table top wood

INSTALLATION:

1. Turn unassembled table top and assembled apron structure upside down on the bench.
2. Determine the number and location of the fasteners in the 3/32" slot and on the underside of the table top (one fastener every 8-10" – see Fig. 3).
3. Mark and drill shank hole 11/64" for #8-5/8" RH wood screws.
4. Drill 3/32" pilot or anchor hole.
5. Install screws.



Still



looking very good 😊 Now time to finish the 2nd table.



Finished Fern Tables



Concluding Thoughts

On the first table, I measured the leg spacings, then transferred the measurements to both the shelf and top. This was very time consuming and prone to error. On the 2nd table, I simply set the table on top of the shelf, got the legs lined up with the corners of the shelf, and marked around legs with a pencil...then scroll sawed. This was much faster and more accurate than transferring measurements. I'm going to do the same method to mark the 4 corners to saw on the top, but you can not put on the 45 degree angles on the legs until after you get the top done (because you can not mark accurately with the 45 degrees in place).

The cheaper red oak I bought at Lowes turned out to have some plane marks that showed up on the table tops and shelves. Next time, I should run these through my planer to remove them. The boards are a hair thicker than 3/4", so I should be able to fine plane them to 3/4" finished thickness.

LumberJocks Comment:

I posted this [project on Lumberjocks.com](#). I got an interesting comment from a person on this web site:

<p>AandCstyle home projects blog 1132 posts in 759 days</p>  <p>#4 posted 1 day ago Flag</p>	<p>Dale, the tables look great. I have always shied away from this type project because of the cross grain situation. The top will expand and contract between the legs, but the apron/rail holding the legs won't. Your write up didn't indicate it, but did you cut a small stopped dado to permit the top to move between the legs?</p> <p>Also, I have always wanted to fill the grain, but usually get too anxious to finish the project by the time I get to that stage. You have inspired me to fill the grain on my current project. Thank you!</p> <p>-- Art</p>
<p>DaleMaley home projects blog 95 posts in 738 days</p>  <p>#5 posted 1 day ago Flag</p>	<p>I table-sawed a slot in the inner rails, then used steel brackets in the slot, then screwed to the top, as you would normally do a table top.</p> <p>Had not thought about the table expanding and hitting the corner posts. There is a little clearance between the table top and the 4 corner posts, but not much.</p> <p>I guess I will find out how it does over the coming years. Thanks for pointing this out, I had not thought about the top or shelf hitting the corner posts. I just copied the original circa 1909 pattern.</p> <p>-- Dale, Illinois, http://dalemaley.webs.com/</p>

NOTE: In 2023, almost 10 years after I built these 2 tables, neither one shows any issues with anything cracking do to expansion and contraction.

Sketchup Warehouse

I uploaded my design to the Warehouse. You can [use this link to view or download it](#).

<https://tinyurl.com/yc4ss6ca>